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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PHAN, THIEM D

ART UNIT

PAPER NUMBER

3729

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Election/Restrictions

1. Applicants' response to the Restriction Requirement, filed on 6/21/06 is acknowledged.

The Restriction mailed on 4/18/06 has been carefully reviewed and is held to be proper. Applicants did not distinctly and specifically point out any logical error in the Restriction Requirement. Moreover, due to the lack of traversal on the merits, Applicants' election Claims 1-15 and 17-19, has been treated as an election without traverse.

Accordingly, Claims 33-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups, there being no allowable generic or linking claim.

The Restriction filed on 4/18x/06 is hereby **made Final**.

Applicants are required to cancel these nonelected claims (33-43) or take other appropriate action.

An Office Action on the merits of Claims 1-15 and 17-19 now follows.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed language "... the transfer of at least one material from a temporary substrate to a final substrate ..." is confusing and unclear. This language not only is held to be vague and indefinite. The metes and bounds or scope of the claimed subject matter cannot be determined since there is no indication of the final substrate in the specification nor the drawings.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Park et al (US 6,001,660).

With regard to claim 1, Park et al teach a method of forming integrated circuit

capacitors, comprising the following steps:

- (a) formation of a cavity (Fig. 10A, well of 63) that includes at least one opening onto an access surface and has an internal wall (Fig. 10A, 54) having at least one region of initial material;
- (b) deposition of a metal (Fig. 10B, 65) close to said region of initial material;
- (c) heating or reflowing of the whole circuit so as to form a portion of compound material (Fig. 10C, 70) in said region of initial material; and
- (d) removal of at least one portion of the metal that has not formed some of the compound material (Fig. 10D, 75) from the cavity via said opening.

With regard to claim 2, Park et al teach the removal of at least one material from the circuit to form the etch stopper (Fig. 10A, 63).

With regard to claim 4, Park et al teach that the initial material (Fig. 10A, 55; Abstract) comprises silicon dioxide.

With regard to claim 5, Park et al teach that the step (b) comprises introducing the metal (Fig. 10B, 65) into the cavity via the opening so as to form a deposition of the metal on at least said region of initial material (Fig. 10B, 54).

With regard to claim 6, Park et al teach that the step (b) comprises depositing the metal outside the cavity (Fig. 10B, 65) close to said opening and wherein, during step (c), the metal

diffuses into the cavity, via said opening of the cavity, as far as said region of initial material, so as to form a portion of the compound material (Fig. 10B, well of 54) in said region of initial material.

With regard to claim 7, Park et al teach that the step (b) comprises a MOCVD method (Col. 6, line 34) or chemical deposition of the metal from gaseous precursor compounds incorporating atoms of the metal, or a deposition using a liquid solution introduced into the cavity and incorporating dissolved chemical compounds based on the metal in an oxidized form.

With regard to claim 8, Park et al teach that the metal comprises cobalt, tantalum, tungsten, titanium, aluminium, copper, silver, platinum, nickel or an alloy comprising at least one of the above metals (Col. 5, lines 15-18).

With regard to claim 9, Park et al teach that the compound material (Col. 5, line 24) formed is electrically conducting.

With regard to claim 10, Park et al teach that the step (d) comprises an etching (Col. 10, lines 51-54) by means of a solution including chemical reactants.

With regard to claim 11, Park et al teach that during step (c), substantially all the initial material present in said region of initial material is converted into compound material such as metal silicide to improve ohmic contact (Col. 3, lines 20-25; col. 5, lines 45-54).

With regard to claim 12, Park et al teach that the internal wall of the cavity has at least two regions (Fig. 10B, 54 & 63) of initial material separated by an intermediate region (Fig. 10B, 60) of a material other than the initial material and wherein, during step (c), the initial material of at least one of said regions of initial material is made to diffuse into the metal so as to form a portion of compound material connecting said regions of initial material (Col. 3, lines 20-25; col. 5, lines 45-54).

With regard to claim 13, Park et al teach that the internal wall of the cavity has a region of silica or of silicon nitride (Col. 5, lines 50-54).

With regard to claim 14, Park et al teach that the cavity comprises a contact hole (Fig. 3A, 54; col. 5, line 32), cylindrical or parallelepiped first volume open to the access surface.

With regard to claim 15, Park et al teach that the cavity furthermore comprises a second volume, surrounded by etch stopper (Fig. 10A, 63), into which the first volume, surrounded by internal wall (Fig. 10A, 54), runs on the opposite side from the access surface, the second volume extending further than the first volume parallel to the access surface.

With regard to claim 17, Park et al teach that the portion of compound material comprises at least one electrical connection of the electronic circuit (Abstract).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, as best understood, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al.

With regard to claim 3, Park et al teach a method of forming integrated circuit capacitors, including the transfer of at least one material (Fig. 10A, 63) from a temporary substrate to a final substrate (Fig. 10E, 50 & 55) carrying the electronic circuit.

With regard to claim 18, Park et al teach a method of forming integrated circuit capacitors, including the process of inhibiting the deterioration of the electrical characteristics of a semiconductor device (Col. 6, lines 51-53) through defining contact holes having compound material (Abstract), which reads on applicants' claimed invention; except for having the portion of compound material comprising a gate of an MOS transistor.

It would be obvious to one of ordinary skill in the art at the time the invention was made to realize that a portion of compound material used for contact hole of a semiconductor device, as taught by Park et al, can be applied in a variety of semiconductors, including the gate of a

MOS transistor, the contact terminal of a memory chip, varistor, capacitor, etc ...

Allowable Subject Matter

8. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Art Unit: 3729

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Tim Phan
Examiner
Art Unit 3729

tp
July 21, 2006



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PRIMARY EXAMINER